Appendix C: General Motors Solar Ventilation Heat Case Study NIST BLCC Comparative Economic Analysis

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* N I S T B L C C: COMPARATIVE ECONOMIC ANALYSIS (ver. 4.4-97) *
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Project: General Motors Solar Ventilation Heat
Basecase: Basecase
Alternative: Solar Case

Principal Study Parameters

Analysis Type: Federal Analysis—Energy Conservation Projects
Study Period: 25.00 Years (Jan 1997 through Dec 2021)
Discount Rate: 4.1% Real (exclusive of general inflation)
Basecase LCC File: GMBASCAS.LCC
Alternative LCC File: GMSOLAR.LCC

Comparison of Present-Value Costs

	Basecase	Solar Case	Savings from Alt.
Initial Investment item(s):			
Cash Requirements as of Service Date	$0	$66,530	-$66,530
Subtotal	$0	$66,530	-$66,530
Future Cost Items:			
Annual and Other Recurring Costs	$0	$3,092	-$3,092
Energy-related Costs	$136,822	$2,627	$134,195
Subtotal	$136,822	$5,718	$131,104
Total Present Value of Life-Cycle Cost	$136,822	$72,248	$64,574

Net Savings from Alternative Solar Case Compared to Alternative BaseCase

Net Savings = P.V. of Noninvestment Savings	$131,104
- Increased Total Investment	$66,530
Net Savings:	$64,574

Note: the Savings-to-Investment Ratio (SIR) and AIRR computations include differential initial costs, capital replacement costs, and residual value (if any) as investment costs, per NIST Handbook 135 (Federal and MILCON analyses only).

SIR for Alternative Solar Case Compared to Alternative Basecase

$$SIR = \frac{\text{P.V. of non-investment savings}}{\text{Increased total investment}} = 1.97$$

Adjusted Internal Rate of Return (AIRR) for Alternative Solar Case Compared to Alternative Basecase
(Reinvestment Rate = 4.10%; Study Period = 25 years)

AIRR = 6.96%

Estimated Years to Payback: Simple Payback occurs in year 10;
Discounted Payback occurs in year 12

ENERGY SAVINGS SUMMARY

Energy Type	Units	— Average Annual Consumption — Basecase	Alternative	Savings	Life-Cycle Savings
Electricity	kWh	0	2,362	-2,362	-59,050
Central Steam	MBtu	940	0	940	23,500